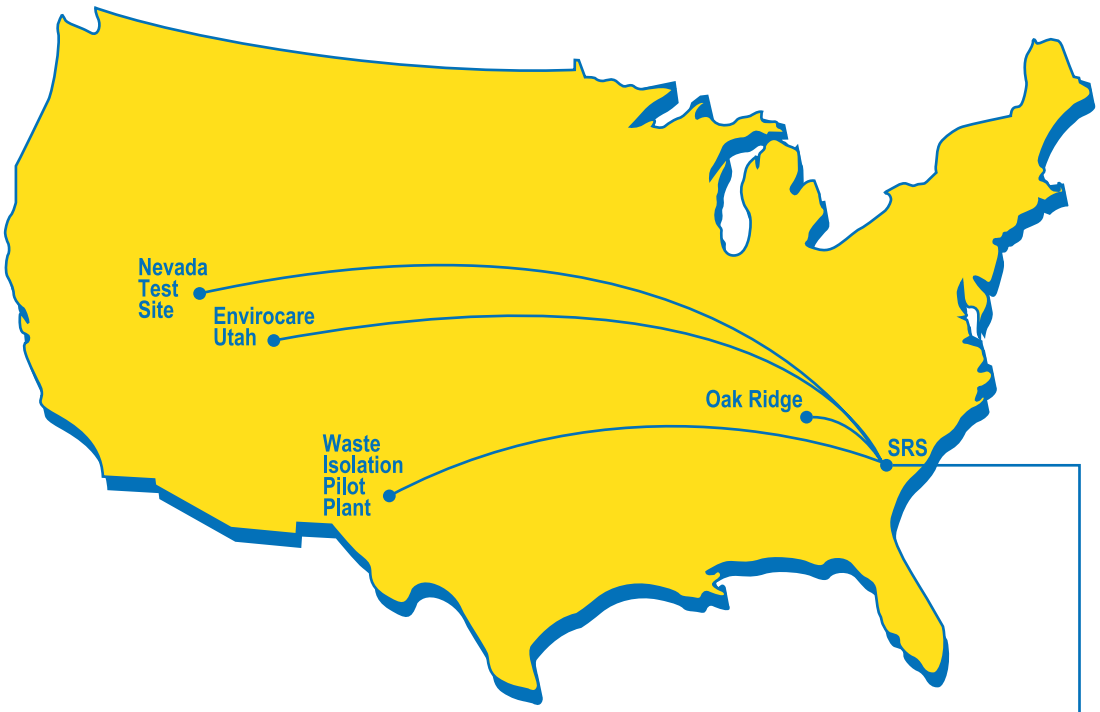
Solid Waste Division 2001 Annual Report





Counting on us to make it happen...

BNFL

Front Cover Photos:

Center: First Shipment of Transuranic Waste to the Waste Isolation Pilot Plant on May 8, 2001; First Shipment of Low-Level Waste to the Nevada Test Site on July 11, 2001; First Shipment of Mixed Low-Level Waste to Envirocare in Utah on August 2, 2001
Left: First Shipment of Mixed Low-Level Waste to Materials and Energy Corporation on September 27, 2001
Right: First Shipment of Polychlorinated Biphenyl (PCB) Contaminated Waste to Oak Ridge on September 26, 2001

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Solid Waste Division

2001 Annual Report



Westinghouse Savannah River Company
Solid Waste Division
Aiken, South Carolina 29808

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To Our Readers,



Each year, through the pages of our annual report, we present our accomplishments of the year. Once again, I'm especially pleased to report that we enjoyed another year of successful waste management operations at the Savannah River Site.

Our safety record improved significantly, reflecting our Behavioral-Based approach to safety and a further six percent improvement in our cost effectiveness can be added to what had been achieved in previous years. However, one of our most pleasing achievements this year was meeting our commitments to our DOE customer and making first-ever shipments of waste offsite, including transuranic, low-level and mixed low-level waste. This contributed to our continuing reduction of the inventory of legacy waste at SRS and involved many good people and lots of hard work. To everyone involved in an achievement of this magnitude, I extend my personal appreciation for a job well done!

Of particular note, the acceleration of our shipments of TRU waste to WIPP allowed the receipt of an initial shipment of TRU waste from Mound, a DOE site near Miamisburg, Ohio. This is in support of closure of the Mound site and will save considerable taxpayer dollars. I would also like to say thank you to the SRS CAB for its support of this endeavor. Understanding the relative low risk and the use of funding external to SRS, the CAB recommended that DOE accept the small inventory of transuranic waste from Mound. In turn, the recommendation assisted in accelerating the schedule for removing transuranic wastes from SRS.

In our continuous pursuit of more cost-effective solutions we also considered how to reserve our more robust E-Area Waste Vaults for higher activity low-level waste. So, I'm pleased to report that this year, we began disposal of low-level waste with extremely low-level radioactive content in engineered trenches while still protecting the environment and the public.

There have been many more successes in 2001, including the Vadose Zone Monitoring System in E-Area, our Waste Minimization/Pollution Prevention program that has won coveted White House awards, and the design and provision for equipment for a new transuranic waste treatment facility; indeed 2001 turned out to be one of the best we've seen. I invite you to browse through the pages of this report and see for yourself how hard we've worked this year to make the Savannah River Site a cleaner and safer place.

To our customers, employees, regulators and our community, please know that each of you played an important role in the success we enjoyed in 2001. Without you, it could not have been done. So to each of you, I say, "Thank you. You made the difference."

W. S. J. Kelly
Vice President and General Manger
Solid Waste Division

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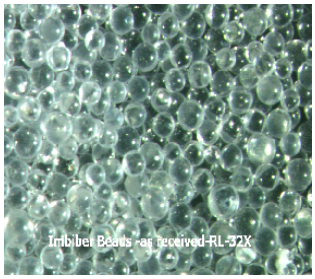
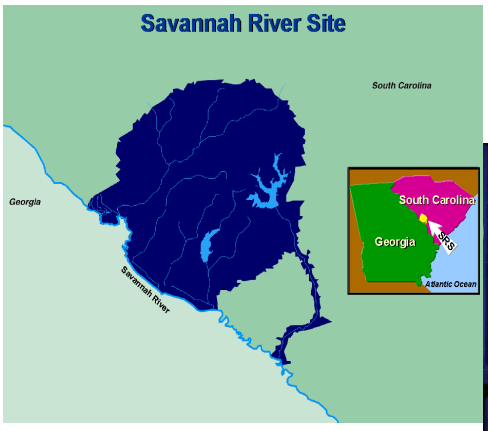


Section One
Where we are, who we are, what we do



The Savannah River Site



The Savannah River Site (SRS) is located in the southeastern coastal plain of the United States in the state of South Carolina. It is bordered to the west by the Savannah River and Georgia, and is close to several major cities including Augusta and Savannah (GA), Columbia, Greenville, and Charleston (SC).

Constructed during the early 1950s, the site's original mission was to produce the basic materials used in the fabrication of nuclear weapons, primarily tritium and plutonium-239, in support of our nation's defense programs.

British Nuclear Fuels plc (BNFL) Savannah River Corporation's primary business at SRS is managing the site's waste activities. While managing the Solid Waste Division (SWD) at SRS, BNFL strongly supports the site's transition from nuclear material production to national security, nonproliferation and environmental cleanup activities. This support includes managing large volumes of the backlogged and legacy wastes that exist at various facilities throughout SRS. Our goal is to eliminate legacy waste left after the Cold War Era and treat, store and dispose of newly generated waste.

As an environmental steward of SRS's waste management program, each day SWD faces the challenge of reducing the volume of waste in the most efficient and cost-effective manner possible.

Consistent with our philosophy, SWD's major focus areas include safety, operations, customers, management systems, people and stakeholders.

Our Mission — To provide an exemplary, high quality and cost- effective solid waste management service in support of the Department of Energy (DOE) missions at SRS and across the complex. While accomplishing our mission, we are also protecting human health and the environment.

Our Vision — To be recognized as "simply the best" in waste management practices and be an organization that the workforce is proud to be a part of.

In order to be successful, we must demonstrate our ability to rapidly adapt and continually improve the way we carry out our mission. Innovation, cost-competitiveness, safety excellence, conduct of operations, employee development and teamwork are the key to achieving that success.

Our People — Recognized as the best in their fields, our people are providing meaningful solutions for achieving our mission. Throughout this publication, the faces and actions of our people attest to their commitment in meeting SWD's vision.



SWD employees demonstrate elements of safety at the 2001 SRS Safety Conference



Committed to SRS's safety culture, DOE and SWD personnel participate in annual events such as the SRS Safety Conference

Section Two
Our relationship with our DOE customer

Our DOE Customer

Fiscal year 2001 can be cited as a period of cooperative spirit between the Solid Waste Division (SWD) and its Department of energy (DOE) customers, both internal and external to SRS. The accomplishments described within this annual report in both technical and programmatic areas are a direct result of the excellent teamwork and communication the two groups share.



DOE, WSRC and BNFL officials participate in the ribbon-cutting ceremony in preparation for the first shipment of TRU waste to WIPP on May 8, 2001

DOE is proud of the 2001 success stories achieved by SWD. Virgil Sauls, DOE Director, Waste and Operations Division states, "DOE claims success when BNFL/WSRC achieve their goals. A prime example is the significant reduction in SRS's legacy waste during fiscal year 2001. For the first time in the history of the SRS, five waste streams left the site for treatment and/or disposal. These waste stream shipments represent a major accomplishment in the cleanup of the Cold War legacy."

Another prime illustration is the cooperation among SWD, SRS DOE customers, and two other DOE sites for enabling shipments of Pu-238 transuranic (TRU) waste from Mound to support an early Mound site closure. An accelerated schedule, both for waste characterization and shipments to the Waste Isolation Pilot Plan (WIPP) in Carlsbad, New Mexico required a high level of open and trusting communications with DOE personnel representing each of these sites.

In addition to the examples above, effective dialog has been introduced and maintained among all SWD facilities and cognizant DOE customers. During routine communications, DOE is able to share expectations of performance; SWD, in turn, shares information pertaining to status of activities of interest to DOE. DOE's involvement in the Saltstone facility restart, for example, showcases this close-working relationship. During 2001, DOE was informed of all aspects of the restart preparation activities, from routine status meetings, to startup issues, to preparations for startup testing.

As in recent years, SWD's contributions to DOE site and complex-wide Pollution Prevention initiatives are also commendable. For example, in fiscal year 2001, SRS was awarded four first place awards and two runner-up awards for Pollution Prevention Program activities.

DOE continues to recognize the Division's contributions to excellent performance in this area. SRS was also the recipient of four national awards (subsequently forwarded as entries in the White House "Closing the Circle" Environmental Awards Program).

The teamwork between SWD personnel and their DOE counterparts has a positive impact in another area of importance to both groups, their relationship with external stakeholders.

Our relationship with our DOE customer

By engaging in consistent communication with stakeholder groups, thereby providing similar affirmative messages, DOE and SWD are enhancing relationships of trust with personnel external to SRS, by having a vested interest in missions performed by SWD.

One of the biggest challenges confronting SWD for 2002 will be to "maintain the momentum" exhibited during the past year. SWD hopes to build on its 2001 successes and meet its aggressive operational goals safely, efficiently, and in a cost-effective manner. By continuing to promote the relationships of trust and cooperation with its DOE customers, SWD hopes to be well-positioned to assume additional missions across SRS and the DOE complex.



Greg Rudy of DOE-SR talks with LaToya Shuler of the Subsurface Contaminants Focus Group at the SRS Earth Day event



DOE and SWD Pollution Prevention Team members Larry McCollum, Steve Mackmull, Sarita Berry, Caroline Grosso, Tony Nasol and Glenn Siry, participate at the 2001 Technology Day event in Augusta, GA



DOE and SWD officials participate at the 2001 opening of the Engineered Trench #1

Section Three
Managed waste streams

Most of SRS's waste is categorized as transuranic, low-level, hazardous, mixed, high-level or sanitary waste. The Solid Waste Division (SWD) is responsible for managing all of these categories except for high-level waste.

Transuranic waste

Transuranic (TRU) waste is waste contaminated with radioactive isotopes that have decay rates and activities exceeding defined levels. It contains man-made elements that are heavier than uranium and decay slowly, thus requiring thousands of years of isolation. TRU waste can include equipment, protective clothing, and tools. At the end of fiscal year 2001, 11,017 cubic meters of legacy solid TRU waste remained in storage on TRU Pads located in the Solid Waste Management Facility.

Low-level waste

Low-level waste (LLW) is any radioactive waste not classified as high level or TRU waste. Examples include protective clothing, job-control waste, equipment, tools, filters, rags, and papers. In fiscal year 2001, 8,114 cubic meters of solid LLW were received into the E-Area LLW facilities, 8,991 cubic meters were treated, and 9,720 cubic meters were disposed. Throughout the year, the volume of LLW in storage declined by 3,359 cubic meters. A long-term (10,000 years) Radiological



Trained SWD operators load TRUPACT-II containers

Performance Assessment (PA) and Composite Analysis (CA), approved by DOE-HQ, demonstrates that SWD's disposal practices meet rigorous standards to protect human health and the environment.

SWD operates DOE's LLW disposal facilities in accordance with DOE Order 435.1, "Radioactive Waste Management". Selecting the appropriate waste facility to send the LLW for disposal depends on the waste characterization and form.

After sorting, segregating and volume reducing, some of the LLW is disposed of in large concrete vaults. Slightly contaminated soil, stabilized ash and rubble are disposed in trenches. In addition, some lightly contaminated job control waste is disposed in trenches saving valuable vault space for higher activity waste materials.

Waste sort facility

The Waste Sort Facility (WSF), located in Cell 12 of the Low Activity Waste Vaults (LAWV), segregates LLW for future treatment and/or disposal in accordance with appropriate technical, environmental and safety requirements. LLW typically arrives at the WSF in B-25 containers and is either placed in 55-gallon drums for compaction or repackaged in B-25s for immediate disposal. In Fiscal Year 2001, 4,966 cubic meters were processed at the WSF.



Aerial view of the E-Area Low Activity Waste Vaults

Managed waste streams

Supercompactor facility

The Supercompactor Facility (SCF), located in Cell 11 of the LAWV, is used to volume reduce compactible LLW. It is designed to compact 55-gallon drums containing LLW into pucks that are subsequently placed into reused B-25 containers for disposal in the LAWV or Engineered Trench. This process allows for a more efficient and cost effective use of LAWV disposal space. In order to make compaction more cost effective, waste generators are now packaging compactible waste in drums versus the B-25 containers. In Fiscal Year 2001, 3,372 cubic meters of compactible LLW was processed at the SCF.

Onsite disposal

LLW is disposed on site using four different options: the LAWV, the Intermediate Level Vaults (ILV), Engineered Trench #1, or the slit trenches. In fiscal year 2001, 2,604 cubic meters of LLW were disposed of in the LAWV, 100 cubic meters were disposed of in the ILV, 4,729 cubic meters were disposed of in Engineered Trench #1, and 2,123 cubic meters were disposed of in the slit trenches. LLW is also received from DOE's Naval Reactors program for disposal and is placed on disposal pads.

Mixed low-level waste

Mixed low-level waste (MLLW) is waste that is both radioactive and hazardous. This type of waste is subject to regulations governing both waste types.

In fiscal year 2001, the Mixed Low-Level Waste Program met all of its Site Treatment Plan (STP) commitments. The STP represents an agreement among the Solid Waste Division, the Department of Energy (DOE) and the South Carolina Department of Health and Environmental Control (SCDHEC) to properly treat SRS's mixed waste on a specific schedule. This accomplishment represents the Solid Waste Division's commitment to responsibly manage these wastes.



Aerial view of the N-Area Hazardous Waste Storage Facility

Hazardous waste

The Resource Conservation and Recovery Act (RCRA) defines Hazardous waste (HW) as any toxic, corrosive, reactive, or ignitable materials that could damage the environment or negatively affect human health. Some examples of SRS Hazardous waste include oils, solvents, acids, metals, soils, and pesticides.

In fiscal year 2001, the Hazardous waste program completed or exceeded all milestones and initiatives.



Hazardous Waste Storage Facility technicians safely vent 55-gallon drums at the N-Area Storage Facility

Sanitary waste

Sanitary waste includes both nonradioactive municipal waste (office waste, food, garbage, refuse, and other solid wastes that are similar to those generated by most households) and industrial waste (construction debris, scrap metals, wood waste, etc.).

Section Four
Treatment facilities



Operations at the Consolidated Incineration Facility before suspension

Consolidated incineration facility

The Consolidated Incineration Facility (CIF) has been in suspension since April 2000. DOE decided to suspend operations at CIF in order to provide funding for higher priority site missions. A study to determine an alternative treatment technology for CIF waste streams was initiated last year.

PUREX waste alternative treatment

One of the major waste streams planned for treatment at CIF was PUREX waste. SRS has a Site Treatment Plan (STP) commitment to treat 50 percent of the legacy PUREX waste by fiscal year 2009. The legacy PUREX waste consists of approximately 37,000 gallons of organic and aqueous liquid stored in the New Solvent Storage Tanks (NSST) in H-Area. The current baseline plan is to restart and operate the CIF to treat this waste at a cost of approximately $50 - 60 million. Because of the high cost, it was determined that a lower cost alternative treatment for the PUREX waste was needed.

A technical evaluation was begun in late 2000 and continued in 2001 to search for viable alternatives to CIF for treating PUREX waste. A systems engineering approach was chosen to provide a formal methodology for identifying, evaluating, and selecting the best alternative treatments. A PUREX alternative treatment team composed of DOE, BNFL and Westinghouse Savannah River Company (WSRC) personnel was established to direct the evaluation process. In addition, periodic meetings were held with the Citizens Advisory Board (CAB) CIF Focus Group to obtain stakeholder feedback during the evaluation.

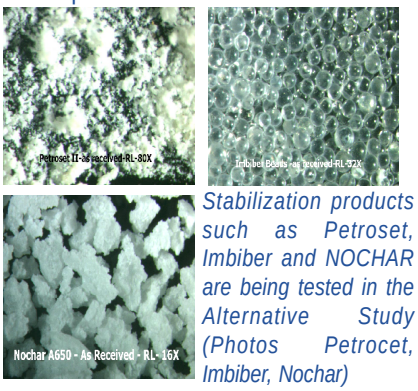
Based on the evaluation, the two best alternatives for the PUREX organic waste are offsite commercial treatment (after pretreatment at SRS to reduce the alpha-emitting radionuclide concentration), and direct stabilization using a low temperature solidification process. The evaluation scores for the PUREX aqueous waste were relatively close, but the top-ranked alternative is to send the aqueous waste to the Saltstone Processing Facility (SPF) for treatment. The other options were direct stabilization and sending the waste to the High-Level Waste (HLW) Tank Farm in F-Area for evaporation and subsequent treatment. These alternatives are still under evaluation to determine technical feasibility and lifecycle treatment cost.

Once the technical feasibility and cost studies are complete in 2002, a preferred alternative treatment will be selected for both the PUREX organic and aqueous waste using another formal ranking session. Then the cost of the selected alternatives will be compared with the current cost baseline of using the CIF in an optimized configuration for treatment of PUREX waste. This will lead to a decision to either pursue deployment of an alternative treatment or restart the CIF.

CIF optimization

The Solid Waste Division completed an important component of the Alternatives Study during 2001. The CIF Optimization Study estimated that the costs associated with restart of CIF and operation with undiluted PUREX waste could be considered as a possible improvement over previous operating practice.

This data will be used in 2002, along with cost estimates for the new technologies being developed in the Alternative Study, as the basis for the decision to either restart CIF or pursue an alternative treatment.



Stabilization products such as Petroset, Imbiber and NOCHAR are being tested in the Alternative Study (Photos Petrocet, Imbiber, Nochar)

Treatment facilities

Effluent treatment facility

The Effluent Treatment Facility (ETF) operated by SWD collects and processes low-level radioactive and chemically contaminated wastewater from both the HLW Tank Farm Evaporator overheads, and from reprocessing facility evaporators. Additional waste streams include wastewater from CIF and well water from Environmental Remediation processes. The ETF process, using micro-filtration, organic removal, ion exchange, and reverse osmosis, allows approximately 99 percent of the water collected to be released to the environment through a National Pollution Discharge Elimination System (NPDES) permitted outfall.

The facility also maintains and operates cooling water basins designed to safely manage reprocessing facility contamination events, and two retention basins that collect storm water runoff from SRS's F and H Areas. The retention basin water is routinely collected, analyzed, and then released. In the event of contamination of one of these basins, the water can be routed through the treatment process.

ETF had an outstanding year in 2001. For example, the facility continued to meet site demand for effluent water treatments (i.e., treated and released over 16 million gallons of water in 2001). ETF also received and processed 56,893 gallons of Environmental Restoration purge water; received, sampled, analyzed, and released approximately 37 million gallons of stormwater from the retention basins, and approximately 12 million gallons of cooling water from the cooling water basins. In addition, 108,371 gallons of miscellaneous waste was received and processed.



The Effluent Treatment Facility

Saltstone facility

The Saltstone Facility is designed to treat and dispose of liquid wastes from various sources. The resulting grout is disposed by pumping it to engineered concrete vaults. After the curing process is complete, the waste form is then disposed as low-level waste.



The Saltstone Facility

The Saltstone Facility has been in suspension since 1999 because of the decision to seek an alternative process to prepare high level waste solutions for the Defense Waste Processing Facility (DWPF) and Saltstone.

With the concurrence of DOE, a decision was reached to begin facility restart in 2001 with a restart scheduled for 2002. The initial mission of the Saltstone Facility will be to process waste in HLW Tank 50, freeing up required tank space within the HLW Tank Farm. Other Waste Concentrate material from ETF will be processed as required.

Section Five
Program accomplishments



First TRU waste shipment to WIPP May 8, 2001



First LLW waste shipment to NTS July 11, 2001



First MLLW waste shipment to Envirocare, Utah, August 8, 2001

Shipments of waste offsite for treatment and disposal

Solid Waste began a new era this year -- shipments of waste offsite for treatment and disposal. This significant accomplishment is the result of years of planning and effort by the Department of Energy (DOE), British Nuclear Fuels plc, (BNFL), and Westinghouse Savannah River Company (WSRC) team.

For the first time, shipments of transuranic (TRU) waste were made to the Waste Isolation Pilot Plant (WIPP) near Carlsbad, New Mexico. WIPP is DOE's deep geologic repository for the nation's legacy TRU waste.

Low-level waste (LLW) that is not technically or economically suitable for disposal at SRS is being shipped to the DOE Nevada Test Site for disposal. Mixed low-level waste (MLLW) is being shipped offsite for treatment and disposal.

These shipment programs represent a major accomplishment in the cleanup of legacy waste materials at SRS.

TRU – "Ship to WIPP"

When WIPP was opened to accept waste from the DOE complex in 1999, SRS began an aggressive, cost-effective program to begin shipments in 2001. On May 9, 2001, the goal of this year-long effort was realized with the initial shipment of TRU waste from the SRS Solid Waste Management Facility to Carlsbad, New Mexico. (See article on page 23.)

This program, expected to continue for 30 years, is a tremendous step forward in DOE's plan to safely dispose of the legacy waste generated during years of production of nuclear materials.

To take part in this significant event, SRS met rigorous requirements of the WIPP Waste Acceptance Criteria (WAC) and the New Mexico Resource Recovery and Conservation Act (RCRA) Permit. Meeting these requirements depended upon developing extensive processes, procedures and facilities, and required significant effort and teamwork from personnel across SWD as well as DOE representatives, other site personnel, subcontractors and the SRS Citizens Advisory Board (CAB).

The certification process alone required three years from program inception to audit completion, and SRS was the first site within the DOE complex to pass the full RCRA audit on its first attempt. BNFL's management team within the Solid Waste Division provided the technical direction and management emphasis to reach this major milestone for DOE.

Many TRU waste accomplishments that begun in 2000 or even earlier, and completed in 2000-2001, were key precursors to final shipment in 2001. These included completing vent and purge operations on the site's inventory of TRU waste containers, completing extensive waste characterization, planning loading processes, completing initial certification assessment of all TRU waste generators and beginning certification of TRU waste management programs.

Throughout the entire Ship to WIPP process, each step was carefully pre-planned. Lessons-learned meetings were conducted and each step was documented. Also throughout the effort, public support was enlisted via ongoing briefings from site personnel to the CAB.

Program accomplishments



Solid Waste Division employees celebrate the culmination of many years of work as the first TRU waste shipment leaves SRS for WIPP

Currently, the program is well underway. Since the initial May 8 shipment of TRU waste to WIPP, SRS has followed with several additional shipments. The site anticipates more this coming year, with shipments expected to increase to 12 per year in fiscal year 2002, peak out at 120 per year in 2023, and continue until the legacy of waste is safely disposed.

Mound waste

SWD agreed to receive TRU waste from Mound for storage and eventual shipment to WIPP provided that the site ships to WIPP twice as much waste as it receives from Mound. The plan to achieve success required the introduction on site of the Mobile Vendor subcontractor to expedite shipments to WIPP. SWD has provided major support of the Mobile Vendor Program, including TRU Pads 3 and 4 container relocation, the completion of two Rubb buildings on Pads 3 and 5, the extension of telephone service and permanent power to the impacted storage pads, and continuing waste characterization assistance.



Members of the TRU waste team who prepared the first shipment of TRU waste that left SRS for WIPP

A related program accomplishment was SRS's receipt of an initial shipment of TRU legacy waste from Mound (a DOE site near Miamisburg, Ohio that is undergoing cleanup and closure). The first shipment was received in September 2001 and contained 63 drums consisting of approximately 190 curies of TRU. This initial shipment will be followed by up to ten shipments of no more than 200 curies each the following year. This amounts to approximately 300 cubic meters of TRU waste that upon transfer to SRS will allow Mound to be closed early, thus saving taxpayers millions of dollars.



First transuranic waste transfer to SRS from the Mound Facility on September 28, 2001

By successfully meeting every requirement of the WIPP, WAC and RCRA, and making a strong start on the Ship to WIPP program, the Solid Waste Division of the Savannah River Site has made a significant contribution towards DOE's commitment to safe disposition of our nation's legacy of nuclear waste. With the Transuranic waste program and Ship to WIPP well underway, workers at SRS fulfill a promise to America's taxpayers to ensure prudent waste disposition today and a safe environment tomorrow.

Low-level waste shipped to Nevada Test Site

The first shipment of LLW from SRS to the Nevada Test Site (NTS) left SRS on July 11, 2001. This represents the first of what SRS expects to be a ten-year shipping program to properly dispose of several LLW streams that do not meet disposal criteria at SRS, or are more economical to dispose at the NTS.

Program accomplishments

This first shipment contained demolition debris from an old tritium facility and consisted of equipment, metal, piping, duct work, plastic and similar materials. Future waste streams from other facilities are being packaged for shipment to NTS in future years.

First shipment of mixed low-level waste

The Mixed Low-Level Waste Program had a significant year of accomplishments. For example, SRS initiated shipments of MLLW treatment residues from the Consolidated Incineration Facility (CIF) which had been stabilized in a cement matrix. The treated residues are contained in 831 55-gallon drums and 79 90-cubic feet B-25 containers. Twenty-five shipments to Envirocare of Utah, Inc. were completed in fiscal year 2001, resulting in disposal of 79 B-25 boxes and 320 drums. Preparations included internal inspection of all containers and overpackaging of the 831 drums into 85-gallon overpack drums. The remaining 511 drums are expected to be shipped and disposed of in October 2002.

The first ever offsite shipments of mixed waste for treatment have also begun at SRS. Twenty-six B-25 containers of CIF Offgas High Efficiency Particulate Air (HEPA) filters were shipped to Materials and Energy Corporation in Oak Ridge, Tennessee for microencapsulation. The treated waste will subsequently be shipped to Envirocare of Utah for final disposal.

Two 55-gallon drums of mixed poly chlorinated biphenyl (PCB) liquid waste, regulated by both the RCRA and the Toxic Substance Control Act (TSCA), were shipped to the TSCA Incinerator at the Oak Ridge, Tennessee DOE site.



First shipment of MLLW leaves SRS for treatment at Materials and Energy Corporation in Oak Ridge, TN

Hazardous waste shipments

During 2001, several notable accomplishments in the shipments of hazardous waste were achieved, including the reduction of the Hazardous Waste Storage Facility's (HWSF) inventory from 216 cubic meters to 133 cubic meters (66 percent of which was legacy waste).

SWD transferred 12.3 cubic meters of "spent" lead bullets from the Hazardous Waste inventory to an offsite recycling vendor. A similar volume of lead from the Environmental Restoration Division was direct shipped for recycle. In addition, 2.53 cubic meters of nickel cadmium batteries were transferred from the Hazardous waste inventory to the newly established site recycle program.

Other Hazardous waste accomplishments in 2001 include the shipment of the last remaining (circa 1984) Chemicals, Metals, Pesticides (CMP) soils; the reduction of on-site handling cost by direct shipping 224 cubic meters of HW; the direct shipment of 82.8 cubic meters of excess sodium tetrapheynlborate from the offsite Holly Oak chemical storage warehouse; the direct shipment of 97.9 cubic meters of lead contaminated soil originating from a diesel spill at the site's lead melter; and the direct shipment of four truck shipments of lab-pack material.

During fiscal year 2001, the HWSF received 28.94 cubic meters of RCRA/TSCA-regulated waste while 224 cubic meters of wastes were directly shipped from the generator to the treatment/disposal vendor. The direct shipment of this waste significantly reduced the site's handling/storage risks and cost.

Direct shipments must meet all site and regulatory requirements in an abbreviated time schedule and demonstrate commendable coordination and teamwork among the disposal vendors and the generating organizations.



Pat Brightharp, Glenn Siry, and a truck driver review shipping documentation for a shipment of sodium tetrapheynlborate to a commercial incinerator in St. Louis, MO

Program accomplishments

Sanitary waste shipments

During the year, 7,171 metric tons of sanitary waste was disposed from SRS, of which 1,562 metric tons were routine municipal-type wastes and 5,609 metric tons were rubble (e.g., construction debris, scrap metal, scrap wood, large pieces of concrete, etc.).

SRS has a recycling program using the City of North Augusta's Material Recovery Facility (MRF). The MRF recovered about 448 metric tons of the municipal-type waste stream material, including white office paper, newspaper and magazines, cardboard, plastic, steel cans, aluminum cans, and glass. Using the North Augusta MRF and Process Engineered Fuel Facility resulted in SRS recovering and recycling about 23 percent from this part of the sanitary waste stream.

The SRS Construction and demolition landfill (Burma Road Landfill) was filled to capacity in early fiscal year 2001 and the state approved the use of a construction barrow pit for earth and solid construction materials. A majority of materials that traditionally were disposed of at the Burma Road Land fill may be disposed in the construction barrow pit. Approximately 15 percent of the material (5,000 metric tons) that would have been disposed of in the Burma Road Landfill must now be routed to the Three River Regional Landfill. Wood waste and untreated pallets are shredded through a tub grinder at the landfill and then piled into long rows where landfill leachate water is sprayed onto the material to help treat the leachate and to accelerate biological breakdown of the primarily wood waste stream into compost for recycle. The Three Rivers Regional Landfill uses non-combustible materials from Environmental Restoration operations as daily landfill cover when the materials become available (1870 metric tons in fiscal year 2001). Using this material (dirt and rock) as daily cover reduces tipping fees by about 25 percent.



The closed Interim Sanitary Landfill at SRS

Construction recycled approximately 278 metric tons of materials such as lead, antifreeze, silver photographic fixative, fluorescent light bulbs, etc. Salvage Operations processed approximately 1,471 metric tons of materials such as scrap metal, toner cartridges, used drums, etc. In total, approximately 1,748 metric tons of industrial materials were recycled through site programs.

During 2001, SWD continued the program to directly dispose of "Green Is Clean" waste into the Three Rivers Regional Landfill. The "Green Is Clean" waste program ensures that waste segregated from operation areas with risk potential are nonhazardous, not radioactively contaminated, and meet sanitary waste disposal criteria. In 2001, SWD processed in excess of 13,000 bags of "Green Is Clean" and associated waste directly to the Three Rivers Regional Landfill, thus avoiding management of this waste stream as a higher cost waste.

A facility to convert SRS incinerable (paper) sanitary waste into a bio-mass fuel form was constructed in 2001. This project will eliminate landfill disposal of the cellulosic part of the waste stream with savings in energy and transportation costs. SRS produced 19 metric tons of paper products in fiscal year 2001 to support test burns of the material scheduled during October 2001, with full scale operations to begin with South Carolina Department of Health and Environmental Control (SCDHEC) approval.

Program accomplishments

Environmental compliance

During 2001, Solid Waste Environmental Compliance (EC) experienced an extraordinary year in that the department was required to increase work load while reducing staff and yet maintained environmental compliance.

Compliance with Environmental Regulations is complex and fits into many areas within the Solid Waste Division operations. For example, during the Facility Evaluation Board (FEB) audit, releases from the Effluent Treatment Facility (ETF) cooling water and air conditioning towers were questioned as to whether or not the discharges were entering a wetland. Since such a determination could not be made because of the lack of seasonal vegetation, it was decided that the releases to the suspected wetland would be discontinued and be placed into the process pumps. EC worked with other site operations during the spring when more wetland-associated vegetation was present and arrived at the conclusion that the area was indeed a wetland. This determination led the ETF to a permanent installation for pumping the releases from the towers back into the process to ensure protection of the wetland.

In 2001, SCDHEC conducted a stormwater inspection that concentrated on SWD's Pollution Prevention Plan and stormwater sample/analysis data. SWD not only passed the audit but also received commendations from SCDHEC for a well-managed Stormwater Program.

During the year, a revision to the renewal of the RCRA Part B Permit for the Mixed Waste Storage Buildings (MWSB), and the Waste Storage Pads was submitted to SCDHEC as well as the associated Location Standards Compliance Demonstration (LSCD). The revision was necessary to include the new Low Activity TRU Waste Facility. Additionally, a RCRA Part B Permit Application and LSCD for the Solvent Storage Tank Facility was submitted for approval.

The Hazardous and Mixed Waste Storage Facilities maintained compliance with all environmental regulations and met all Site Treatment Plan commitments for the year. The Annual RCRA Comprehensive Monitoring Evaluation (CME), which focused on the SWD RCRA facilities, was conducted jointly by SCDHEC and the Environmental Protection Agency (EPA) Region IV. The CME audit was successful with no findings or major issues identified.

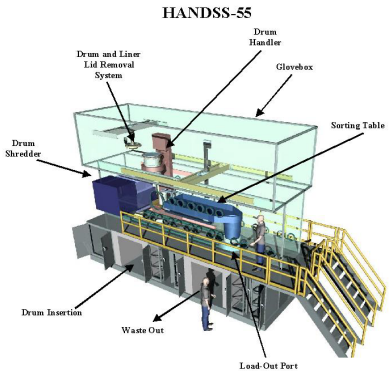
New TRU facility

The design and provisions for equipment for a new treatment facility for contact handled TRU waste, to be called the Low Activity TRU Waste Facility (LATF), is progressing.

The facility will comprise a semi-remotely operated, modular, waste sorting and repackaging system for 55-gallon drums, HANDSS-55 (handling and segregating system for 55-gallon drums) installed in an existing building that will be appropriately modified to provide containment, ventilation, fire protection and other services. LATF will provide the capability to remove the waste from 55-gallon drums, sort and segregate the contents, and repackage the waste acceptable for WIPP disposal separate from the non-compliant waste. The capability also exists to use the facility for confirmation of radiography by visual examination of the waste. Conceptual design of the building modifications and service provisions were completed ahead of schedule.



Infrared Welding, a part of the HANDSS-55 System



Development of HANDSS-55 equipment is progressing at Idaho National Engineering and Environmental Laboratory (INEEL), Savannah River Technology Center (SRTC), and MSE Technology Applications, Inc. (MSE) at Western Environmental Technology Office (WETO). The facility is scheduled to begin operations during the fourth quarter of fiscal year 2004.

Program accomplishments

Low-level waste disposal of large equipment (components-in-grout)

During 2001, SWD implemented a new method of disposal for equipment that is physically too large for vault disposal and contaminated at high enough levels to require vault type isolation. The technique called "components-in-grout", was developed and a special Performance Assessment (PA) conducted to demonstrate that the technique was protective of human health and the environment.

Two tankers, one formerly used to transport radioactive PUREX solvent, and one used to transport contaminated spent fuel basin water, were disposed this year along with a large cesium source. The technique consisted of placing the item on a one-foot thick grout base, filling any void space (inside the tanker) with special formulation grout, and grouting around the item using the trench walls as a form. This technique allows for the disposal of large legacy equipment that is classified as low-level waste, as well as any newly generated waste, without having to build new vaults.









The process used for the components in grout disposal of cesium source equipment with lead shielding





Components-in-grout disposal



Spent solvent tanker components-in-grout

Unreviewed disposal question

Personnel from SRTC and the SWD have developed and implemented an innovative review process for potential changes in low-level radioactive waste disposal operations.

The Unreviewed Disposal Question (UDQ) process is the first formalized system implemented in the DOE complex to examine low-level waste disposal changes in much the same way the Unreviewed Safety Question (USQ) process examines operational changes.

SRTC has extensive experience developing guidance for PAs, the detailed technical analyses of the impacts of waste disposal facilities), across the DOE complex.

Program accomplishments



Engineered Trench #1

While working on PAs around the complex, the comment was frequently heard that a system such as the USQ process was needed in the waste disposal arena. SRTC combined with Solid Waste's expertise in waste disposal facility safety to develop the process.

The UDQ process, which ensures that proposed changes receive the appropriate level of review, is now being used whenever changes such as new waste streams or changes in the design of a waste disposal container are proposed at SRS. A series of questions are answered to ensure that the proposed change is within the existing performance envelope. This is a way to ensure that the changes that are significant will be provided with the appropriate attention.

In May, the first four changes were evaluated under the UDQ process. All were found to be within the Performance Assessment. In some cases, their evaluation pointed to restrictions that needed to be placed on the proposed changes, such as the curie limits, or limits to the percentage of waste that could be wood products. These conclusions gave the Facility Operations Safety Committee confidence that the changes could be implemented without compromising the safety and performance of the Low-Level Waste Disposal Facility.

SRS engineered trench

Due in large measure to the involvement of the CAB, SRS has been able to begin disposal of low-level waste with extremely low radioactive content in engineered trenches while still protecting the environment and the public. On February 13, 2001, SWD commenced operations of the Low-Level Waste Engineered Trench Number 1 (ET#1).

This "drive-in" trench, located inside E-Area, is designed to extend the useful life of the existing Low Activity Waste Vaults (LAWV) and allow shallow land burial of selected low-level waste. ET #1 is designed and a large percentage of waste (approximately 65 percent), currently stored in the existing LAWV, is candidate for future trench disposal. This approach will enable the more robust LAWVs to be reserved for higher activity low-level waste.

The Engineered Trench measures 200 feet in length by 20 feet in diameter. It is equipped with a concrete sump and pump system (including sample station) to manage anticipated rainfall. The sump contents are sampled, and provided they meet acceptable release criteria, are pumped to an existing site outfall. The design of the trench also enables the existing sump system to be used for future trench expansion. The trench is also equipped with a vadose zone monitoring system (VZMS) that is installed around the perimeter.

This system monitors the trench's impact to the groundwater and is used to validate the Performance Assessment. Ten wells are installed, which house approximately 70 instruments and allow determination of the direction and magnitude of contaminants to ensure that the groundwater is protected. With the ET #1 now fully operational, SRS expects to extend the valuable and expensive LAWV space until 2024.



The ET#1 is one-fourth full after five months of operation

Program accomplishments

Vadose zone monitoring system

Beginning in fiscal year 1999 and continuing through 2001, BNFL-Savannah River Company (SRC) embarked on a program of field monitoring and characterization investigations specifically targeted for the vadose zone within E-Area. Comprehensive, state-of-the-art vadose zone monitoring systems (VZMS) are successfully verifying performance of low-level radioactive waste (LLW) disposal trenches. This program has been deployed with the support of experts from SRS, the Idaho National Engineering and Environmental Laboratory (INEEL), and the Desert Research Institute (DRI). The program was jointly funded through EM-30 programs and EM-50 via the Accelerated Site Technology Deployment Initiative. The VZMS Program has significantly enhanced our ability to responsibly predict contaminant fate and transport properties throughout the vadose zone to the underlying aquifers. Vadose zone data has enabled us to demonstrate that release of contaminants from the E-Area disposal units meets the Drinking Water Standard (DWS) for the contaminants of concern. Evaluation of the VZMS data correlates well with the results of the E-Area Low-Level Waste Facility Performance Assessment.



The Vadose Zone Monitoring System at the Engineered Trench #1

The VZMS Program relies on a dense array of instruments and samplers (nearly 175) installed in 26 borehole wells around the existing shallow disposal slit trenches and the Engineered Trench. Three primary instrument types for measuring critical soil parameters were installed: advanced tensiometers (ATs) for measuring soil-water potential (capillary or suction pressure), water content reflectometers (WCRs) for determining soil-moisture content, and suction lysimeters for collecting soil-water samples for analysis of contaminants. The 2000 and 2001 VZMS Programs included secondary instrument types for redundancy, including neutron logging (ten neutron probe access ports) for determining soil moisture and gas sampling for collecting soil-water samples. Instruments were placed above fine-sediment zones (clays and silts) in the subsurface where moisture is likely to collect. These locations were identified through cone penetrometer testing (CPT) and modeling, and knowledge of site-specific hydrogeology.

More than two years of data have been collected from the VZMS sensors/samplers installed the first year.

Evaluation of the VZMS data indicates that radioactive disposal operations are being conducted in a way to ensure groundwater protection.

Suction lysimeters have been sampled and analyzed, with data indicating that tritium from disposal operations is moving through the vadose zone at levels predicted to meet the DWS at the compliance point. Furthermore, the conservative approach used in the E-Area Low-Level Waste Facility (EALLWF) PA transport modeling has been validated using VZMS data.

Program accomplishments

Waste minimization/pollution prevention program

SRS embraces pollution prevention as a primary strategy to operate in a compliant, cost-effective manner that protects the environment and the safety and health of SRS employees and the public of the surrounding communities. During 2001, waste generators implemented ninety-eight projects resulting in an avoidance of approximately 222,000 cubic feet of radioactive and hazardous solid waste. The estimated annualized savings from these projects are approximately $50 million, with projected life cycle cost savings of $123 million.

SRS continues to advance in the prevention of pollution by implementing cost-effective waste reduction projects. For example, Contamination Area (CA) Rollbacks continue to drive down LLW generation while reducing employee hazard exposure and increasing productivity. During the year, the CA Rollback project reclaimed about 90,000 square feet of radiological controlled areas resulting in an estimated annualized savings of $3.6 million.

High Level Waste (HLW) reduced Defense Waste Processing Facility (DWPF) water needing reprocessing at the Tank Farms by 47 percent, approximately one million gallons through process modifications. HLW also avoided generation of about 18,000 gallons of a new waste stream by process modifications to tank ventilation operations.

In addition, waste segregation and diversion of waste to lower risk and cost waste streams saved approximately $2M in 2001; improved contamination control at the job source through new containment and glove bags avoided about 2,000 cubic feet of waste and saved $340,000; and modifications to ground water treatment units reduced waste generation by 4,300 cubic feet saving approximately $500,000 per year.

The Processed Engineered Fuel Facility received approval from SCDHEC for a test burn of pelletized paper products. The burning of this paper in the A-Area boiler will result in a reduction of sulfur release into the air from the burning of coal and will save approximately $200,000 annually on coal cost alone.



Sample of a paper pellet made from paper and cardboard products collected at SRS



Paper pellets are extruded from a pelletizer machine

The Pollution Prevention (P2) Program also made a significant effort to implement Affirmative Procurement at SRS. Affirmative Procurement is an EPA-required program applied to federal agencies and their contractors to increase the market for products containing recycle material content.

Efforts included training courses that were offered to Site Procurement employees; all SRS Store's products (approximately 23,000 items) were evaluated for compliance with EPA requirements and some site procurement specifications were revised.

The Tritium Extraction Facility (TEF) at SRS is a major new Defense Program facility. The TEF base pad was poured in two sections using about 3,600 cubic yards

Program accomplishments

(about 400 mixer truck loads) of 50 percent flyash concrete. This purchase of concrete with flyash at SRS highlights one of EPA's environmentally-preferable products in large-scale use by a DOE Defense Program facility.

Recycling opportunities were expanded during the year. New recycle markets for clean, Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), and radioactively contaminated lead were established. SRS shipped approximately 60 tons of lead to a combination of a lead smelter and the National Metal Recycle Center in Oak Ridge, TN for recycling. Additionally, over three tons of nickel cadmium batteries and 48,000 gallons of used oil were recycled in fiscal year 2001 through new recycle programs. In total, SRS recycled more than 4,500 tons of materials in 2001 that otherwise would be classified as waste.

An important part of the SRS P2 Program is the promotion of employee and public awareness. Section 8 provides a description of the P2 Program's public awareness and outreach accomplishments.

Behavior-based safety

BNFL continued the focus on the Behavior Based Safety (BBS) process during 2001. This process promotes the Voluntary Protection Program (VPP) tenet of worker involvement by ensuring appropriate representation by all work groups as BBS Observers and team members of the "Local Safety Improvement Teams" (LSIT). Currently there are LSITs in each of the operating areas and the number of trained observers has increased in each of the first two years of implementation. These safety teams along with the BBS observers are strengthening the SWD safety posture by reviewing observation data and initiating improvement efforts focused on reducing "at risk" behaviors. In addition to cultivating the process within the Solid Waste Division, BNFL subject matter experts continue to help with the implementation of BBS with other WSRC partners.



Posters such as those pictured above, are distributed monthly across the Savannah River Site to raise employee awareness of the Behavior-Based Safety process

In the wake of the tragedies that occurred in the United States on September 11, 2001, the employees and management of the Solid Waste Division became even more committed to ensuring that safety be continuously addressed in the workplace. The Solid Waste team strongly believes that the principles that support the BBS process along with the determined effort to implement this process will help the SWD realize this goal.

Section Six
Public involvement & communications

Savannah River Site's Citizens Advisory Board and Ex-Officio members



Public Involvement

During 2001, we saw once again how the public increased active community participation in many of the Savannah River Site (SRS) waste management operations activities. Our stakeholders provided a collective voice by sharing recommendations, participating in permit decision-making, and discussing many environmental issues affecting SRS.

The active and comprehensive public participation and communication program that the Solid Waste Division (SWD) has in place provides a forum where the public can hear accurate, complete and timely information prior to participating in meaningful, sharing opportunities. A major goal of the program is to fulfill the objectives of the SWD and SRS strategic plans to "build trust and communicate openly, honestly and responsibly with employees, customers, stakeholders and regulators" and to "work to extend the support of external stakeholders for the pursuit of SRS and complex business goals."

SWD works with the Waste Management Committee of the SRS Citizens Advisory Board (CAB) and Consolidated Incineration Facility (CIF) Focus Group, as well as with members of the public, to address health effects and risk related to SRS's waste management operations.

The CAB, which is comprised of 25 individuals from South Carolina and Georgia, are chosen by an independent panel of citizens from approximately 250 applicants. The board members reflect the cultural diversity of the population affected by SRS. The members, who serve two- or three-year terms, represent all walks of life, including the business world, academia, local government, environmental and special interest groups, and the general public. Two of the members specifically represent economically disadvantaged persons. The CAB also works with the Environmental Protection Agency (EPA) Region IV, and the South Carolina Department of Health and Environmental Control (SCDHEC) on environmental remediation, waste management and other related issues.

In 2001, the SRS CAB submitted nine recommendations to DOE on Solid Waste issues alone. Out of the nine recommendations, four were related to the suspension of operations at the CIF, three addressed transportation, transuranic (TRU) waste, and offsite shipments of SRS's low-level (LLW) and mixed low-level waste (MLLW), and two referred to the offsite disposition of metals. One of the most significant accomplishments in the public involvement arena is the work related to the "Ship to WIPP Program". SWD personnel provided progress briefings on the program to the CAB throughout the year and on May 8, 2001, SRS initiated shipments of its TRU waste to the Waste Isolation Pilot Plant (WIPP). WIPP is a geologic repository in Carlsbad, New Mexico, which had been constructed specifically for the permanent disposal of TRU waste.

Public involvement & communications

On May 8, 2001, as the media focused its attention on SRS's first shipment of 42 drums of TRU waste, CAB members were invited to join in the celebration with DOE officials and other invited guests by waving at the special TRUPACT-II transporter as it crossed the site's boundary line on its way to WIPP. Witnessing the first shipment of TRU waste leaving SRS for WIPP, CAB members expressed extreme stakeholder pride in seeing a project that the CAB has been involved with for years come to fruition.



Members of the SRS CAB join in with DOE and SWD officials to celebrate SRS's first shipment of TRU waste to WIPP



SRS supporters wave at the TRUPACT-II transporter as it crosses SRS's boundary on the way to WIPP

In concert with the CAB's work on the TRU Waste Program, one of the recommendations the group provided in 2001, concerned the CAB's recognition of DOE's effort to consolidate PU-238 waste from sites with small inventories.

Understanding that considerable taxpayer dollars could be saved, the relative low risk, and the use of funding external to SRS, the CAB recommended that DOE accept the small inventory of TRU waste from the Mound site in Miamisburg, Ohio. After receipt at SRS, it was recommended that the Mound waste then be assayed, sorted, segregated and repackaged for its eventual shipment to WIPP. In turn, this recommendation would assist in accelerating the schedule for removing TRU wastes from SRS.

Another example of stakeholder involvement is the work of the CIF Focus Group, which had been chartered to track work on alternative treatments and technologies for PUREX, non-PUREX and other potential waste streams identified for incineration throughout the DOE complex. Last year, when the CAB learned that DOE suspended operations at CIF, the CAB's Waste Management Committee (WMC) held a public workshop to address the suspension. The CIF Focus Group was chartered one month later and has been holding monthly meetings since then to hear information regarding the alternative technologies and provide input through the recommendation process to DOE. In 2001, three members of the CIF Focus Group were appointed by the Environmental Management Advisory Board (EMAB) in Washington D.C. to serve on the Alternative Technologies to Incineration (ATIC), a subcommittee of the EMAB.

Providing our stakeholders, both CAB members and the public, with valuable program information is an integral part of ensuring they have basic, timely and firsthand knowledge of SRS's waste management operations. Last year, SWD personnel conducted tours of facilities such as the Supercompactor, E-Area Vaults,

Public involvement & communications

Waste Sort Facility, Engineered Trench, and the Ship to WIPP Preparation Area. Tours are a useful learning tool that assists new CAB members in identifying operations with the SWD issues they hear about in public meetings. Public meetings are the major forum SRS uses as means of two-way communications on SRS issues. Public meetings are forums where interested persons can ask questions and discuss issues outside of the formality of public hearings. Public hearings are frequently required by regulations and provide a formal opportunity for the public to present comments and oral testimony on a proposed agency action.

In 2001, SWD supported the public scoping meetings for the Metals Disposition Programmatic Environmental Impact Statement (PEIS). These meetings were held to assist DOE in the development of the PEIS. More than 100 people attended the meetings and provided helpful comments to DOE as it begins preparation of the PEIS.



Virgil Sauls, Director of DOE-SR Waste Operations Division speaks to members of the CAB, the public and regulators on program issues

As Solid Waste Public Involvement has grown over the years, so have the environmental issues our stakeholders are addressing. In order to facilitate public participation, SWD personnel will continueto provide basic information about DOE requirements and give examples of the activities required under the Solid Waste program, as well as those suggested activities that serve to augment regulator requirements. As our stakeholders attend meetings, they will continue to provide insight into other opinions and concerns as well.

As we have seen over the past seven years, SWD public involvement has often helped to establish greater rapport between our citizens and SRS waste management activities.



Public officials, CAB members and SWD personnel attend public meetings on a regular basis



Members of the SRS CAB, the public, DOE and regulators visit the E-Area Vaults as part of tour provided by SWD personnel

Communications

Employee communications at the Savannah River Site takes many forms. Once objectives are set, a variety of techniques may be adopted to reach SWD staff.

In the Solid Waste Division, management believes that before any communications programs can be implemented, communicators must have a good sense of program issues and concerns. Several innovative approaches are then used to convey messages to division employees.

For example, fortnightly or bimonthly briefings are conducted and managers are responsible for ensuring that all SWD employees receive the same message. Message topics typically cover safety, operations, security, division and site news.

While roundtable meetings are scheduled and conducted in an informal setting, more emphasis is placed on All-Hands meetings where everyone in the division attends the same meeting to hear general or specific news from SWD Vice President and General Manager W. S. J. Kelly.

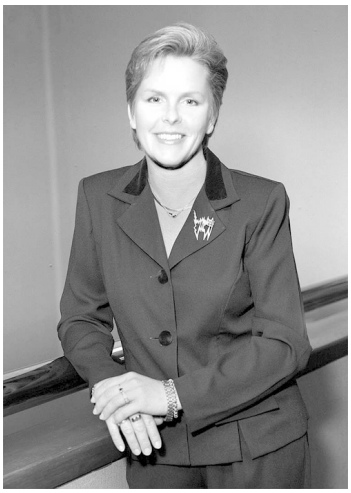
Another form of employee communications is the *SRS News*, an award-winning monthly publication that reaches more than 13,000 employees. Division news is gathered and provided for publication on a monthly basis. In the following pages, articles that have actually appeared in the *SRS News* throughout 2001 are provided verbatim for your review. Often, the articles are SWD accomplishments or achievements that have appeared in earlier pages of this report. However, they have been compiled here to demonstrate that division news is shared with all SRS employees.

Section 7
SRS News

November 2000

Ellen Parrish is quarter's Pollution Prevention Hero

Ellen Parrish is primarily responsible for the Contamination Area Rollback success story in SRTC. Ellen led the effort for successful decontamination and rollback of the 773-A E-Wing fan rooms, as well as room F-003. Prior to the rollbacks, she performed numerous walkdowns and housekeeping activities. Ellen then coordinated and assisted with the decontamination activities, removal of legacy material and equipment, as well as relocating a radioactive source. One of the major benefits of the rollbacks is the reduction of low-level radioactive waste that is generated from these Contamination Areas. Another benefit is that personnel are no longer required to wear two sets of protective clothing or respiratory protection to enter these newly rolled-back areas.



Ellen Parrish

The total rollback effort of the E-Wing fan rooms and F-003 was 3,441 square feet. This will prevent the generation of approximately 100 cubic feet of low-level waste annually. In addition, laundering over 1,400 pounds of protective clothing annually will be avoided. The total annual savings are estimated to be over $21,500.
Parrish continues with her excellent efforts and has most recently completed rollback of the F-090 corridor. Her current Contamination Area Rollback is taking place in F-091.

Parrish is a Senior Operations Specialist with the Technical Area Operations group.

December 2000

SRS celebrates America Recycles Day

The average American generates nearly 1,500 pounds of trash each year, creating more than 200 million tons of waste annually in the United States.

While these figures are daunting, there are measures each consumer can take to reduce these numbers. Each year more Americans are recycling. The nation's recycling rate is now more than 28 percent. This means the steel and aluminum cans, glass jars, paper, plastic and even rechargeable batteries we place at the curb or at drop-off facilities are making a real difference in reducing our nation's waste.

On Nov. 15, SRS, along with thousands of Americans across the country, took part in "buy recycled" activities as part of America Recycles Day. Exhibitors from both on- and off-site organizations provided employees with information on recycling and buying recycled products.



E2, the Energy Guy

The South Carolina Energy Office and E2, the energy guy, talked with employees about how we can save energy at work and at home. Santee Cooper personnel and Tim McCormick of WSRC's Central Service Works Engineering discussed a new program that involves recycling NiCad batteries, motor oil and antifreeze.

SRS News

The Solid Waste Division highlighted Recycling, Reducing and Reusing at SRS in a pictorial backboard display and held open discussions with employees about recycling and reuse on site. The IDEAS group accepted energy saving ideas from employees and gave out coffee mugs to those who submitted new ideas. U. S. Forest Service's bags and bags of roadside rubbish dramatically displayed the trashing of our site roadways.

The theme for this year's America Recycles Day was "For the Future... Buy Recycled Today." It underscored the importance of purchasing recycled content products and packaging, and the contributions that recycling makes on the environmental well-being of future generations. Thousands of recycled content products are available and, by purchasing them, the nation's consumers are building markets for finished products made from the items they place in those recycle bins.

February 2001

Cheek named P2 Hero

Andy Cheek was named Pollution Prevention (P2) Hero for his work in the successful rollback of a previous contamination area in the Fabrication Laboratory in SRTC. Cheek coordinated the decontamination and rollback activities in addition to disposition of the excess materials. Approximately 2,715 square feet within the Fabrication Laboratory was rolled back from a contamination area to a radiological buffer area.

The Fabrication Laboratory is located in 773-A, where installation of equipment for the L-Area Experimental Facility will soon begin. This rollback will allow workers to install equipment as well as perform future work without wearing protective clothing or generating low-level waste. Cheek's work will prevent the generation of over 1,000 cubic feet of low-level waste. In addition, laundering over 18,200 pounds of protective clothing will be avoided. The total savings are estimated to be over $338,000.



Andy Cheek

Cheek is a First-Line Supervisor in the Material Technology Section of SRTC.
The P2 Hero Award is issued quarterly and recognizes SRS employees for innovative improvements in the pollution prevention arena using one or more of the Five Imperatives. For more information on pollution prevention, visit the SRS Pollution Prevention web site at http://shrine.srs.gov/html/p2/index.html.

April 2001

Simonetti named second quarter Pollution Prevention Hero

Frank Simonetti of High-Level Waste Division's Waste Pretreatment Department (WPT) was selected as the Pollution Prevention (P2) Hero for the Second Quarter of Fiscal Year 2001.



Frank Simonetti

Simonetti is being recognized for his long-term determination to roll back contamination areas in WPT. As the WPT Facility Decontamination Lead, he developed the facility radiological hazard reduction goal of eliminating radiological protective clothing for the performance of routine operator rounds and surveillance as part of the WSRC Radiological Improvement Strategic Plan.

SRS News

Simonetti generated a facility Contamination Area (CA) rollback plan that would greatly reduce radiological hazards in the facility in six years. He planned the CA reduction activities around facility priorities, which included waste tank material transfers and equipment installations, replacements and repairs. Safety and personnel protection were of the utmost importance to Simonetti, and he stressed these daily in his pre-job briefings. In one year, Simonetti's efforts resulted in the recovery of 45 percent of the total contamination areas within the WPT Facility.

The immediate recognized cost savings to the facility for applying the protective coating versus the destructive removal of concrete was approximately $189,000 (one-time savings). The savings realized annually, per tank, is approximately $157,000 per year.

June 2001

SRS sends first shipment of transuranic waste to WIPP

The first shipment of transuranic, or TRU, waste from SRS to the Waste Isolation Pilot Plant (WIPP), located in Carlsbad, New Mexico, left the Site in early May.

The shipment, which contained 42 drums of TRU waste, is the first of at least four SRS shipments to WIPP planned for fiscal year 2001.

During the next 33 years, SRS plans to ship about 11,000 cubic meters of transuranic waste to WIPP in about 1,800 shipments.



TRUPACTII leaves SRS for WIPP

The 1,540 mile trip took approximately 39 1/2 hours, including time required for WIPP drivers to stop and inspect the truck every 100 miles or two hours.

"This shipment represents a milestone for Savannah River, allows the Site to focus on disposal rather than only storage, and is a major accomplishment in our efforts to clean up the legacy of the Cold War," said Secretary of Energy Spencer Abraham.

TRU waste consists of disposable items, such as clothing, tools, rags, residues, debris and other items contaminated with small quantities of radioactive elements, primarily trace amounts of plutonium. The TRU waste is currently being managed and stored at the SRS Solid Waste Management Facility. "This is a momentous occasion for the site and the partnership team," said Sam Kelly, vice president and general manager of the Solid Waste Division.

"We have brought together the best from both sides of the Atlantic to create a very powerful capability at the site. We are proud to have started reducing the legacy of TRU waste at SRS for the first time in history. This shipment is the result of a safe, efficient and very cost-effective team effort."

The TRU waste is shipped to WIPP in a specially designed container, called Transuranic Packaging Transporter Model 2, or TRUPACT-II. The container is 8 feet in diameter, 10 feet high, doubly contained, nonvented and constructed of stainless steel. A series of stringent tests were conducted on the container. The WIPP Panel of the National Academy of Sciences said the container is "safer than that employed for any other hazardous material in the U.S."

WIPP is designed to permanently dispose of transuranic waste generated by defense-related activities. The facility (which consists of a waste handling building and disposal rooms excavated in an ancient, stable salt formation) is approximately 2,150 feet (almost one-half mile) beneath the earth's surface.

New look of air lines provides pollution prevention success story

Employees in HB Line Operations have a new and improved hood. And no, it's not part of an urban renewal project.

A recent improvement to their fresh hood, respiratory protection equipment has proven to be a pollution prevention success story.

In the past, employees used fresh air hoods with an integral air line that connected to a breathing air manifold.

SRS News

When a breathing air hood was disposed of as waste, there were no options but to dispose of the airline also.

A redesign of the fresh air hoods, completed last year by Industrial Hygiene, allows the use of a separate air line, which is connected to a shortened "pigtail." The airline is connected to the hood on one end and the breathing air manifold on the other. This new design allows reuse of air lines as long as the airlines are not damaged or contaminated.

Based on year-to-date operations, 85 percent of the fresh air hoods shipped to HB Line in FY 2001 have used a separate air line.

Using this new method will potentially save over 1,000 cubic feet of generated waste. The next step in this program will be the usage of the separate air lines on fresh air hoods in other targeted areas across the site.

If you would like information on this topic, please contact Lee Smith, 952-7888.



HB Line Operations personnel use new and improved hoods

August 2001

Stepping out into the 'real world'

When someone says that they are applying for an internship, the first question that usually comes to mind is "I wonder what type of job they will perform at the hospital?" Well, internships are not just for doctors anymore.

Internships have become increasingly popular, as employers are seeking candidates that have on-the-job work skills. WSRC offers educational and research opportunities to pre-college students and teachers, undergraduate, graduate and postgraduate students, as well as university faculty and scientist emeritus, in a variety of assignments.

Using the site's unique resources and state-of-the-art equipment and facilities, participants conduct research with site experts while gaining knowledge and experience in their field of study.

"The WSRC's Research Internship Program is designed to create a pipeline of diverse, technically capable workers for SRS and the CSRA," say program administrators Michelle Nix and Bernice Bryant. "Internships are a 'win-win' for both the student and the employer. The student is gaining valuable work experience that will enable them to land a job, and the employer is hiring a trained employee who is ready to apply what they have learned in the working environment."

Research interns Marion Donaldson, Kendrick Green and Ryan Wedderien express their views about the program. Marion Donaldson is currently a research intern with the Solid Waste Division. Donaldson says "This internship has taught me about life in general. School doesn't really afford you the opportunity to see how things are done in the real world." Since his internship at SRS, he has learned that he enjoys working "out in the field," rather than working in an office setting.

Savannah River Technology Center intern Kendrick Green shares similar sentiments. "This internship has provided me with a tremendous amount of experience that gives an in-depth understanding of how systems work. In class there's an explanation for everything. Here you must investigate to find a logical explanation for things." Green says he has learned more about leadership and teamwork skills during his internship.

"The internship program is absolutely fabulous! I have learned things that I never would have dreamed about in college," says Ryan Wedderien, Environmental Restoration Division intern. Wedderien has been an intern for two years. Her work often includes working with Savannah River Ecology Laboratory and SRS Forestry personnel.

As one of the largest employers in South Carolina, SRS has benefited tremendously from hiring interns previously trained in WSRC's program. To date, 743 have participated in the internship program since its inception, with 43 being hired into permanent positions in "critical needs" areas such as technology, science and engineering-related fields.

Internship applications are accepted year round. For more information, contact Bernice Bryant, 725-8408, or Michelle Nix, 725-7610, WSRC Education Outreach Programs.

Section 8
Pollution prevention public outreach

Pollution prevention public outreach

The Pollution Prevention Program (P2) promotes Pollution Prevention awareness on site and within the local community. The Pollution Prevention team reaches many different facets of the local population through various types of activities.

In 2001, P2 Program personnel planned and participated in activities such as Earth Day, Pollution Prevention Week and American Recycles Day. These events allowed both local community and on site organizations to share their information on pollution prevention initiatives and also offered opportunities for additional public involvement.

Through a joint effort with the Kroger grocery store of North Augusta, South Carolina, The *Town Planner Calendar* of North Augusta, and the Belvedere Elementary School along with the SRS Pollution Prevention team conducted a Earth Bag Coloring contest to help take the environmental message of Earth Day city wide. The grocery bags were colored with Earth Day messages by over 500 students at the Belvedere Elementary School in North Augusta, South Carolina. After the judging of the winners, the bags were distributed to shoppers at the local Kroger on Earth Day to spread the student's environmental messages within the local community.

A new joint venture between the Solid Waste Pollution Prevention Team, The National Science Center and the Environmental Science Educators Cooperative began in 2001. The event was an ECO-MEET for middle school students to compete in environmental categories in a team competition.

There were four categories, which the students were judged, fish identification, forestry identification, snake identification and "How to establish a Pollution Prevention program in your school". The Pollution Prevention Team provided judges for the Pollution Prevention category and also cooked lunch for the teachers and students participating in the event.



Brittany King, Keri Carver and Amber Davenport of Belvedere Elementary School each received $25 for the Earth Day messages decorated on Kroger shopping bags. Sarita Berry and Caroline Grosso of the SRS Pollution Prevention Team, and Angie Carlton of the North Augusta Town Planner Calendar are also pictured



Phil Solesby, manager of Kroger, North Augusta, Sarita Berry of the SRS Pollution Prevention Team and students from Belvedere Elementary School delivering the Earth Day bags to the North Augusta Kroger preparing for distribution on Earth Day 2001



John Harley, Sarita Berry,Tim Coffield, Caroline Grosso and Bill Boettinger are the Pollution Prevention Team members who helped host and judge the ECO-MEET competition

There is no question that the Pollution Prevention Team had a busy year in 2001. Team members not only participated in the hightlighted events, but also joined in other significant events including the Engineering Week celebration at the National Science Center's Fort Discovery in Augusta, GA. Team members also sponsored a session chair and three presentations at the Southeast Environmental Management Association (SEMA) conference.



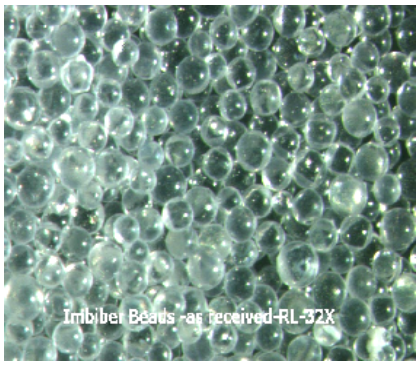
The Earth Day tree give away is always a popular event. In 2001, trees were distributed to employees at the SRS's Earth Day celebration

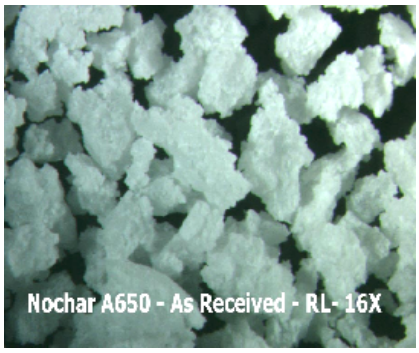
Section 9
Vision: 2002

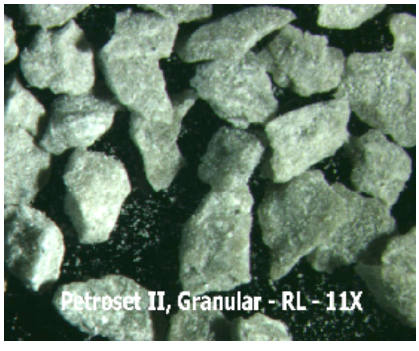
Path forward

As noted throughout this report, significant accomplishments were achieved within all Solid Waste Division facilities during fiscal year 2001, despite numerous challenges and funding constraints. Our remarkable successes are a reflection of a highly motivated and versatile workforce. This same workforce will help us continue to strive toward our vision of being "simply the best" as providers of waste management services throughout the DOE complex. In addition to the aggressive goals for fiscal year 2002, there will continue to be new missions and emergent work. Though much of this scope may be unplanned, in showing support for a new site paradigm, SWD will strive to "accomplish even more with the personnel it has".

Because of our notable achievements during 2001, the performance bar has been raised. Our customers have participated in many of our successes and are expectant that this momentum will continue. During 2002, missions of continued site and complex-wide visibility include further reduction of the Cold War waste legacy through offsite shipments; the startup of the Saltstone Facility; certification of the Mound TRU Waste characterization process; and identification of an alternative treatment option for incineration of CIF legacy waste, to name only a few.







Micrographs of alternative treatment media for stabilization of CIF legacy waste

In spite of our notable success stories, we will continue to routinely step-back and critically re-examine our performance using all sources of feedback, both internal and external. It is vital that we do this not only to avoid the potential pit fall of self-satisfied complacency, but also to ensure that we retain the flexibility and ability to innovate to meet and overcome the undoubted technical and financial challenges which lie ahead.

As we move into the second year of the millennium, the primary vision for the Solid Waste Division will therefore continue to be our safety and performance excellence.

As this Annual Report goes to press, the fiscal year budget is still uncertain. The Solid Waste Division will fully endorse all SRS initiatives to ensure that critical missions are met and will demonstrate to our customers our efforts to minimize costs. The Solid Waste Division looks forward to its successes in fiscal year 2002.